

CLAIMS

1. Method for inhibiting scale formation on structural parts in contact with an aqueous medium in a desalination system comprising adding to said system a treatment comprising a phosphono functional polymer I.

2. Method as recited in claim 1 wherein said phosphono functional polymer I comprises a repeat unit formed from polymerization of an ethylenically unsaturated monomer (B) that includes phosphono functionality.

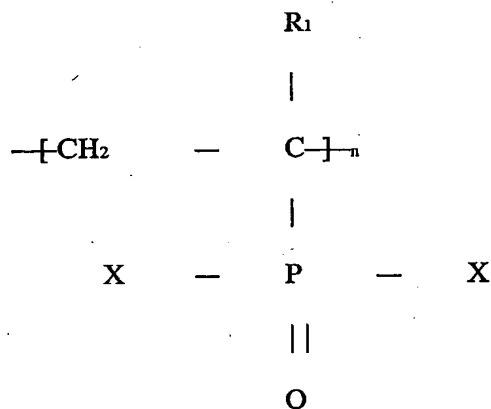
3. Method as recited in claim 2 wherein said phosphono functional polymer I comprises a second repeat unit formed from polymerization of a nonphosphonate monomer (F).

4. Method as recited in claim 3 wherein said non phosphonate monomer (F) is a member selected from the group consisting of (i) carboxylate monomers, (ii) sulfonate monomers, (iii) amides, and (iv) allylethers and sulfonate and phosphate allyl ethers.

5. Method as recited in claim 4 wherein said phosphonate monomer (F) is a carboxylate monomer, said treatment further comprising a carboxylate polymer II, said I and II being added to said aqueous medium in a combined amount I and II of about 1-500 ppm.

6. Method as recited in claim 5 wherein said carboxylate polymer II is a polymaleic acid or anhydride thereof.

7. Method of inhibiting scale formation on structural parts in contact with an aqueous medium in a desalination system comprising adding to said aqueous medium an effective amount for the purpose of a phosphonate polymer (I) including a repeat unit (B) of the structure



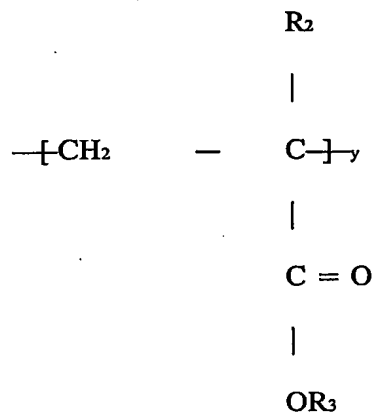
wherein R₁ is H or lower alkyl of from about 1 to 6 carbon atoms and wherein X is H, or OM wherein M is a cation.

8. Method as recited in claim 7 wherein said phosphonate polymer is poly(isopropenylphosphonic acid).

9. Method as recited in claim 8 wherein said phosphonate polymer is poly(vinylphosphonic acid).

10. Method as recited in claim 9 wherein said phosphonate polymer (I) comprises a copolymer having a repeat unit (F) of the structure

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wherein R₂ is H or CH₃, and R₃ is H or a cation.

11. Method as recited in claim 7 wherein said aqueous medium comprises magnesium cations and hydroxide anions under conditions in which, in absence of treatment, Mg(OH)₂ scale would form on said structural parts.

12. Method as recited in claim 7 further comprising also adding a carboxylate polymer (II) to said aqueous system.

13. Method as recited in claim 12 wherein said carboxylate polymer (II) is a member selected from polymaleic acid and anhydrides.

14. Method of inhibiting magnesium hydroxide scale formation in a desalination system in which an aqueous salt containing medium is brought into contact with system equipment, comprising adding to said aqueous medium a treatment comprising

a) polymer of isopropenylphosphonic acid;

b) a carboxylate containing polymer of acrylic acid and its salts, maleic acid and its salts and anhydride, and copolymers or mixtures thereof,

c) a dispersant; and optionally a

e) phosphonate.

15. Method as recited in claim 14 wherein said carboxylate containing polymer is a polymaleic polymer or anhydride.